

NON-WIRES SOLUTIONS UPDATE

Exploring reliable, cost-effective non-construction transmission solutions

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Round Table Members

Brian Silverstein, Co-chair

Manager of Network Planning,
Bonneville Power Administration

Carolyn Whitney, Co-chair

Vice President of Business Strategy,
Public & Tribal Affairs,
Bonneville Power Administration

Ken Canon

Executive Director, Industrial Customers
of Northwest Utilities

Ralph Cavanagh

Co-Director, Energy Program, Natural
Resources Defense Council

Art Compton

Administrator, Planning, Prevention and
Assistance Division, Montana Department of
Environmental Quality

Tom Foley

Consultant, Energy and Environmental
Economics, Non-Wires Study

Nancy Hirsh

Policy Director, Northwest Energy Coalition

Hardev Jui

Director, Transmission and Distribution
Planning, Seattle City Light

Robert Kahn

Executive Director, Northwest Independent
Power Producers Coalition

Tom Karier

Council Member, Northwest Power
Planning Council, Washington State

Paul Kjellander

President, Idaho Public Utilities Commission

Steve LaFond

Energy Resources Utilities Management,
The Boeing Company

Sue McLain

Vice President of Operations – Delivery,
Puget Sound Energy

Kris Mikkelsen

Chief Executive Officer, Inland Power
& Light Company

Bill Pascoe

Consultant, Pasco Energy

Heather Rhoads-Weaver

Executive Director,
Northwest Sustainable Energy for
Economic Development

John Savage

Commissioner, Oregon Public
Utility Commission

Margie Schaff

Consultant, Affiliated Tribes of Northwest
Indians, Economic Development Corporation

Vickie VanZandt, Executive Sponsor

Vice President, Operations and Planning,
Bonneville Power Administration

Dick Wanderscheid

Director, Electric and Telecommunications,
City of Ashland

Mike Weedall, Executive Sponsor

Vice President, Energy Efficiency,
Bonneville Power Administration

Round table works to assist BPA's transmission planning

To make sure it provides the most cost-effective solutions for the region's transmission needs, the Bonneville Power Administration formed a round table of Northwest leaders to work with the agency in investigating how to effectively integrate non-construction alternatives into its transmission planning process to fix transmission bottlenecks.

"Before we decide to build a line, we want to be sure we have taken a comprehensive look at all alternatives and chosen the right solution," said Vickie VanZandt, BPA vice president for Transmission Operations and Planning. "We want to look at all options, not just traditional construction, so we can find the solution that makes the most sense from an engineering, economic, reliability and environmental standpoint."

BPA is challenged with an aging transmission system that is stretched to the limit in meeting today's demands. "Despite significant growth in the Northwest population and economy, there has been no substantial transmission construction since 1987," VanZandt added.

BPA owns and operates 75 percent of the Pacific Northwest's electrical system. The system includes more than 15,000 miles of transmission line and 285 substations. The lines network across 300,000 square miles in Oregon, Washington, Idaho, Montana and sections of Wyoming, Nevada, Utah and California. BPA's transmission system serves

an annual peak usage of about 30,000 megawatts and generates more than \$700 million a year in revenues from the sale of transmission services.

"Over the last 15 years, we have reinforced our transmission system primarily with lower-cost upgrades such as voltage support devices, advanced controls and temporary measures. We are at the point now that we need reinforcement. We can't just rely on these fixes alone any more. The outage on the East Coast brought that message home to everyone across the country in August," she stressed.

"Before we decide to build a line, we want to be sure we have taken a comprehensive look at all alternatives and chosen the right solution."

Vickie VanZandt
Vice President, Operations and Planning
Transmission Business Line

In the last decade, transmission system transactions have grown by nearly 5 percent annually. "The situation is similar to a highway system that, over time, becomes congested as the amount of traffic increases beyond what it was designed to handle," said Brian Silverstein, BPA manager of Network Planning. "Today, critical paths on the Northwest transmission grid are congested and the system is near or at capacity. Congestion is not

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Transmission planning

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only a risk to public safety and reliability, it reduces BPA's ability to get low-cost energy to consumers."

To address the problem, the BPA's Transmission Business Line identified 20 major infrastructure projects in 2001 to address regional transmission reliability problems and heavily congested paths. Last April, the agency broke ground on its first major transmission project since 1987, with construction on the Grand Coulee-Bell 500-kilovolt transmission line. In July, work began near Seattle on the Kangley-Echo Lake 500-kilovolt line to strengthen reliability in the Puget Sound area. Work is currently under way on three substations as well.

Last April, the agency broke ground on its first major transmission project since 1987, with construction on the Grand Coulee-Bell 500-kilovolt transmission line.

When TBL initiated its infrastructure program in 2001, it also commissioned a study on how to enhance the agency's planning process and to suggest which of the projects might be candidates for further analysis to determine if non-transmission initiatives could provide reliable, cost-effective and practical solutions.

The study also recommended enhancing BPA's transmission planning process and urged gathering insights and feedback from key regional representatives. (See story at right for more information on the study.) ■

Forming the Non-Wires Solutions Round Table

BPA contacted leading experts from the Northwest to gauge their interest in its initiative to help determine whether non-transmission options can be employed as viable alternatives to transmission expansion.

Eighteen Northwest leaders, ranging from regulators to utility experts to environmentalists (see list on page 1), agreed to participate and, in January 2003, the first meeting of the Non-Wires Solutions Round Table was held.

The round table held four meetings in 2003 and BPA expects the group to continue meeting quarterly over the next two years.

The types of alternatives being explored by the round table include energy efficiency programs, demand reduction initiatives, pricing strategies and distributed generation, among other things.

"We need broad-based understanding and support for this new approach to transmission planning," said Brian Silverstein, manager of Network Planning. "The insights we gain from individual members of the round table are invaluable to

both BPA and transmission planners throughout the region."

In seeking round table members,



Round table members discuss institutional barriers at the October meeting in Portland.

BPA included a broad range of knowledgeable and potentially affected stakeholders to discuss the non-construction alternative planning concept.

"We are thrilled that these people have agreed to join us," said Vickie VanZandt, vice president of Operations and Planning. "We needed key questions and potential alternatives examined early enough so we can use the results effectively. We hope the round table will assist us with that as well as setting criteria to help determine when non-construction alternatives are feasible and when they are not." ■

Innovative study sets the stage for BPA's non-wires initiative to engage stakeholders

When BPA transmission planners identified 20 projects to address congested pathways and shore up the Pacific Northwest's stressed transmission system, they realized their planning needed to take an all-angles approach to improving

reliability, one that also included non-construction alternatives.

As a result, BPA commissioned an in-depth study of its transmission planning process from the firm Energy and Environmental Economics and consultants Tom Foley and

Innovative study sets the stage (continued from page 2)

Eric Hirst. Working with BPA's transmission planners, and BPA's Power Business Line's energy efficiency experts, the consultants reviewed the existing transmission-planning processes and identified improvements to ensure that non-construction alternatives are considered appropriately and early enough so they may be used to fix problems. A report, issued in November 2001 and called *Expansion of BPA Transmission Planning Capabilities: A Report On Non-Transmission Alternatives*, laid out the group's findings and recommendations.

The consultants looked at each of the Transmission Business Line's

20 problem areas. They identified which projects offered a realistic opportunity for a non-wires option and which did not. The study found that many of TBL's transmission projects were driven by the need to connect new generation or were too far along to allow adequate time to identify suitable non-construction alternatives. However, the report did identify potential non-construction opportunities to reduce transmission peak demand on the Olympic Peninsula and in the Puget Sound area (with the Monroe-Echo Lake proposed project.)

Today, a pilot project is under way on the Olympic Peninsula to test a demand exchange concept to reduce electricity demand within

a 24-hour notice (see story on page 4).

The report also suggested that TBL engage regional stakeholders in its planning process with the goal of sharing information that would lead to a more efficient regionwide system. This recommendation was the genesis of the Non-Wires Solutions Round Table. ■

A complete copy of "Expansion of BPA Transmission Planning Capabilities: A Report On Non-Transmission Alternatives," is available on the Web at: http://www.transmission.bpa.gov/tbl/lib/Publications/Infrastructure/BPA_TBL_Planning.pdf.

2003 Non-Wires Solutions Round Table accomplishments

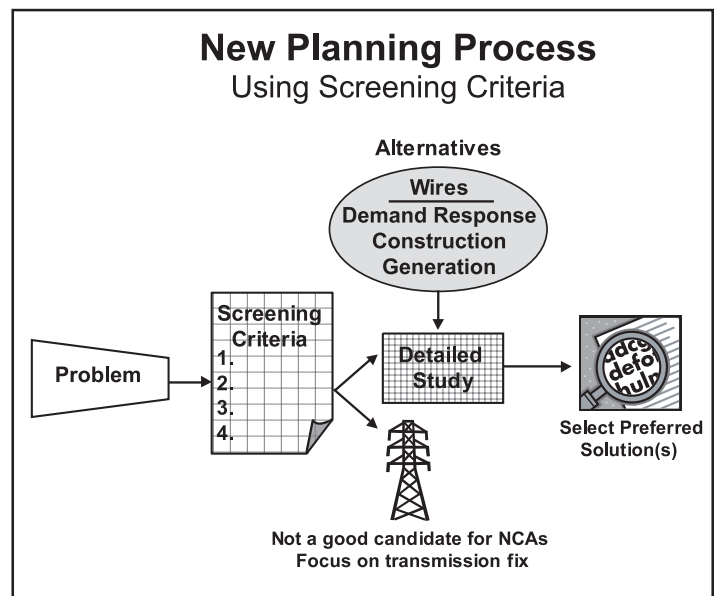
In its first year, the Non-Wires Solutions Round Table tackled some significant issues, including:

- **Screening criteria** – The round table reviewed and provided feedback on criteria BPA can use to screen projects for non-construction alternatives. In 2004, this criteria will be used to evaluate proposed transmission construction projects to see if they are a candidate for in-depth analysis.

- **Detailed Studies** – BPA completed three detailed analytical studies of current proposed transmission projects (Kangley-Echo Lake, Olympic Peninsula and Lower Valley in Wyoming) to evaluate the potential for non-construction options to cost-effectively defer transmission upgrades. These studies will help develop a template that BPA staff can use on future projects.

- **Review of Non-Wires Technology** – With experts from BPA's Energy Efficiency organization, the round table reviewed a wide range of technology in current use as possible solutions to congestion problems.

- **Institutional Barriers** – Seventeen institutional and policy issues were identified as potential barriers to non-construction options. The round table helped BPA prioritize the top six key institutional barriers and four major policy issues. Analytical work is currently under way.



BPA uses its new screening criteria to evaluate potential non-wires projects.

Finding ways to resolve these issues will be a major focus of the round table in 2004. (See the list of institutional barriers on page 4.) ■

Top institutional barriers facing non-wires implementation

The round table helped BPA determine the top six technical, economic and institutional issues preventing the use of non-wires alternatives in transmission planning:

- **Lost revenues** – What mechanism can be created to allow a utility to benefit from using non-wires options that reduce sales?
- **Lack of incentives for accurate forecasting** – Could high utility load forecasts lead to new transmission construction ahead of need?
- **Lack of transparency in transmission planning process** – How can transmission planning be less reactive and increase transparency in the planning process to develop opportunities to deploy non-construction alternatives?
- **Inaccurate peak-load price signals for energy and transmission** – Most end-use customers pay average power and transmission and distribution rates. If they were to see the real price of serving loads at all times, would they adjust consumption?
- **Reliability of non-wires alternatives** – What can we do to increase understanding of the reliability of measures used to defer transmission need to be greater?
- **Funding and implementation** – Non-wires solutions to transmission can provide benefits to the delivery system all the way from the generator to the end user. Who pays for the measures and who implements? ■

Pilot project tests ability to reduce line loading

This winter several electric customers on Washington's Olympic Peninsula will participate in a pilot project to help BPA test an innovative method of reducing energy loads during peak power periods.

The goal is to find out the feasibility of contracting with large energy users to reduce their energy use during critical periods, thus reducing the likelihood of a transfer problem that causes voltage instability and ultimately a blackout.

Under the pilot program, BPA will pay these customers to curtail power purchases during critical peak hours. Using an Internet-based trading platform, known as the Demand Exchange, BPA alerts customers of potential transmission constraints and the need for demand reductions. The hourly price per megawatt is posted, allowing customers the chance to evaluate their options, calculate savings and notify BPA if they want to participate and to what extent. Participants receive a 24-hour advance notice and then can bid their available on-site generation and curtailable load.

"We are testing this concept on the Olympic Peninsula because it is an environmentally sensitive area with increasing demand for electricity and limited transmission capacity," said David Le, BPA project manager. "Currently the peninsula has transmission limitations. This pilot



The Olympic Peninsula's transmission system today serves about 1,000 megawatts of load.

will help us analyze if the Demand Exchange can be a viable piece of the portfolio solution to adequately reduce load, thus giving us a viable alternative to building or deferring a new transmission line in the area."

Through this program, BPA hopes to achieve about 30 megawatts of deferred demand and potential generation.

"BPA views the Demand Exchange as an excellent first step in our exploration of non-construction alternatives to satisfy transmission needs," said Mike Weedall, BPA vice president of Energy Efficiency.

BPA has operated a market-price based Demand Exchange on the generation side of its business for the past three years. To date, the program has enrolled about 400 megawatts of demand, achieved 10,000 megawatt-hours of voluntary load curtailments and realized more than \$2 million in wholesale power cost savings. ■

For more information

Visit TBL's Web site at http://www2.transmission.bpa.gov/http://www2.transmission.bpa.gov/PlanProj/Non-Wires_Solutions_Round_Table/. ■